CLAIMS

What is claimed is:

1. A method comprising:

diverting a predetermined portion of each of a plurality of optical signals to a plurality of photonic detectors within a first optical network node; and

detecting the plurality of signals using the plurality of photonic detectors, each of the plurality of photonic detectors being designated to detect one of the plurality of optical signals.

2. The method of claim 1, further comprising:

adjusting a power level of each of the plurality of optical signals after diverting the predetermined portion of each of the plurality of optical signals.

3. The method of claim 1, further comprising:

demultiplexing by wavelength a plurality of incoming optical signals to the first optical network node from a second optical network node to generate one of the plurality of optical signals from each of the plurality of incoming optical signals.

4. The method of claim 3, further comprising multiplexing the plurality of optical signals to generate a plurality of outgoing optical signals after adjusting the power level of each of the plurality of signals.

5. The method of claim 1, wherein the plurality of signals includes a plurality of optical signals generated by a plurality of light sources in a plurality of optical transceivers of the first optical network node in response to a plurality electrical signals.

6. The method of claim 1, further comprising issuing an alarm if one of the plurality of photonic detectors detects a failure of one of the plurality of optical signals.

7. The method of claim 1, wherein the predetermined portion is approximately 5%.

8. An apparatus comprising:

a switch fabric to connect different ones of a first plurality of ports of said switch fabric with different ones of a second plurality of ports of said switch fabric;

a plurality of photonic detectors to detect the presence or absence of an optical signal; and

a tap optically coupling each of said plurality of photonic detectors to a different one of said second plurality of ports.

9. The apparatus of claim 8, further comprising:

a variable optical attenuator optically coupled to said tap.

10. The apparatus of claim 8, further comprising:

a plurality of wavelength demulitplexors each having an input to receive an incoming optical signal from an optical fiber, wherein each of said optical signals is

capable of including one or more wavelengths, wherein each of said plurality of wavelength demultiplexors includes a plurality of outputs to carry a different one of said plurality of wavelengths, and wherein the ones of said plurality of outputs of said plurality of wavelength demultiplexer to carry the same one of said plurality of wavelengths are optically coupled to different ports of said first plurality of ports.

11. The apparatus of claim 8, wherein said switch fabric, plurality of photonic detectors, tap, and variable optical attenuator are all on the same die.

12. The apparatus of claim 8, further comprising a plurality of wavelength mulitplexers each having an output to provide an outgoing optical signal to an optical fiber, wherein each of said optical signals is capable of including one or more wavelengths, wherein each of said plurality of wavelength multiplexers includes a plurality of inputs to carry a different one of said plurality of wavelengths, and wherein the ones of said plurality of inputs of said plurality of wavelength demultiplexer to carry the same one of said plurality of wavelengths are optically coupled to different ports of said second plurality of ports.

13. An optical network node comprising:

a plurality of wavelength switch modules each for a different one of a plurality wavelengths and each including,

a switch fabric to configurably switch to connect different ones of a first plurliaty of ports of said switch fabric with different ones of a second plurality of ports of said switch fabric;

a plurality of photonic detectors to detect the presence or absence of an optical signal;

a tap optically coupling each of said plurality of photonic detectors to a different one of said second plurality of ports; and

a plurality of wavelength demulitplexers each having an input to receive an incoming optical signal from an optical fiber and each having a plurality of outputs optically coupled to provide the corresponding wavelengths to the corresponding wavelength switch modules.

14. The optical network node of claim 13, wherein each of the plurality of wavelength switch modules further includes a variable optical attenuator optically coupled to said tap.

15. The optical network node of claim 13, further comprising a plurality of wavelength mulitplexers each having an output to provide an outgoing optical signal to an optical fiber and each having a plurality of inputs optically coupled to one of said second plurality of ports of each of said plurality of wavelength switch modules.

16. A system comprising:

an optical network including a plurality of optical fibers; and

a first optical network node, coupled to the optical network, the first optical network node comprising:

a plurality of wavelength switch modules each for a different one of a plurality wavelengths and each including,

a switch fabric to configurably switch to connect different ones of a first plurliaty of ports of said switch fabric with different ones of a second plurality of ports of said switch fabric;

a plurality of photonic detectors to detect the presence or absence of an optical signal;

a tap optically coupling each of said plurality of photonic detectors to a different one of said second plurality of ports; and

a plurality of wavelength demulitplexers each having an input to receive an incoming optical signal from an optical fiber and each having a plurality of outputs optically coupled to provide the corresponding wavelengths to the corresponding wavelength switch modules.

17. The system of claim 16, wherein each of the plurality of wavelength switch modules further includes a variable optical attenuator optically coupled to said tap.

18. The system of claim 16, wherein the first optical network node further comprises a plurality of wavelength mulitplexers each having an output to provide an outgoing optical signal to an optical fiber and each having a plurality of inputs optically coupled to

one of said second plurality of ports of each of said plurality of wavelength switch modules.

19. The system of claim 16, further comprising a second optical network node, coupled to the first optical network node via the optical network, to send the incoming optical signal to the first optical network node.